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ABSTRACT

A study was conducted to identify effective instructional strategies being used to teach reading at the secondary school level. In the first phase of the study, researchers observed 43 secondary school remedial reading classrooms to determine the relationships between teaching processes and students' gain in reading. In the second phase, the researchers provided workshops for the teachers observed, using the effective strategies found in the first phase. In the third phase, the researchers monitored the teachers instructed in the second phase as they conducted further workshops. Data for the first phase were collected from pretest and posttest scores, observation of teacher behaviors, a teacher questionnaire, a classroom environment scale, and previous reading achievement test data. The data showed that teachers who spent more time organizing during class periods and were not directly involved with students had students with a lower reading gain. A negative relationship was also found between reading gain and teachers offering students a number of choices about materials and activities. Outside intrusions were also negatively related to reading gain. The results subsequently indicated that students made greater reading gains in classrooms where the teacher provided more interactive or oral instruction and where students frequently read aloud. Analysis of similar data taken from the second and third phases of the project indicated that the workshops helped teachers change their behaviors as recommended. (HTH)

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EFFECTIVE USE OF TIME IN SECONDARY READING CLASSROOMS

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EFFECTIVE USE OF TIME
IN SECONDARY READING CLASSROOMS

Rationale For The Study

The impetus for our study of teaching basic reading skills in secondary schools came from national concern for the large number of students being graduated from high schools who were not functionally competent in reading, writing, and computational skills. This problem was brought to national attention by several malpractice suits filed against school systems by parents of graduated students who could not fill out job applications or pass reading exams given by the United States Army (Saretsky, 1973). The first of these suits was in 1972 when "Peter Doe" claimed that his fifth-grade reading level at graduation was below the competency necessary for holding a job.

The plummeting test scores from 1957-1975 reported by Harnischfeger and Wiley (1975) and confirmed by school districts throughout the country stimulated many state legislatures and school boards to draw up lists of educational standards that students in high schools should meet at various stages of their education. The movement has spread so rapidly that, in 1981, all but four states had competency tests for graduation.

Testing students to assess deficiencies in basic skills is useful only if strong remediation measures are taken. In several states, legislation mandates that all students failing the competency test must be provided with school programs that will make it possible for them to gain the skills required to pass the test. The requirement that secondary schools provide remediation for all of these students has had a great impact on school planning. To meet the requirement, remedial classes in reading, writing, and math are being offered, and teachers have been reallocated to teach these basic skills classes regardless of their backgrounds.

The purpose of our study was to identify effective instructional strategies being used by teachers to teach reading. Our hunch was that some teachers would be able to choose a curriculum and develop effective instructional strategies, while others would not.

Classroom Process And Student Outcomes Research

Most of the research relating classroom processes to student outcomes has been conducted in elementary schools (e.g., Bemis and Luft, 1970; Good, 1978; McDonald and Elias, 1976; Soar, 1973; and Fisher and Berliner, 1978). The process variable most often found to be related to achievement was student time spent on task. The

Brophy and Evertson (1974) study of seventh and eighth grades in Austin, Texas, indicated that efficient teaching strategies were related to student on-task behavior and that misbehavior had a negative relationship with achievement. Stallings and Kaskowitz (1974) in their study of first and third grade Follow Through classrooms, found an interaction between process variables and student cognitive and noncognitive outcomes. Barak Rosenshine (1977) and Donald Medley (1977) have summarized most of the important current studies of teaching effects.

A Brief Description of the Three Phase Project

The study presented here was unique among research studies in that it provided participating school districts with a process for using research findings in a regenerative way. The Study of Teaching Basic Reading Skills in Secondary Schools was a three-phase study* funded by the National Institute of Education. In Phase I, we observed 43 secondary reading classrooms selected from six Northern California school districts to examine the relationships between teaching processes and students' gain in reading. The results of this study provided some very specific guidelines for efficient instructional strategies to use with secondary remedial reading students. Of the teachers in the study, only 50% had had any training to teach reading; thus we prepared a series of inservice workshops to assist teachers to plan and organize reading classrooms.

In Phase II** we provided these workshops to 47 teachers in the districts where we conducted Phase I of the study plus one neighboring district. One-half of the teachers were trained and the other half were in a control group that did not receive training until the end of the experiment. The workshops were well attended and these teachers did change behaviors in recommended ways. What is more important, their students made more reading gain than did the students in the control group. The teachers were enthusiastic about the program and recommended that we offer the training to other teachers in their districts.

To accomodate these requests, which were beyond the scope of our staff, we developed the Phase III program in which we monitored our trained teachers as they trained other teachers in their districts. This three-phase effort left the districts with a cadre of teacher-trainers to carry on the process of training secondary teachers to use effective methods for helping students gain basic reading skills. Only Phase I of the project will be reported in this paper.

Sample

The compensatory education director in six school districts invited remedial reading teachers in junior and senior high schools to attend an informational meeting. The project leader described the purpose of the study which was to identify effective strategies that help change a student's history of failure in reading to one of

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*Stallings, Needels and Fairweather, SRI International, 1978.
**Stallings, Needels and Stayrook, SRI International, 1979.

success. These findings would then be used to help guide training for teachers of students needing remediation. As a result of these information sessions, 43 teachers representing six school districts volunteered to take part in the study. Of these teachers, only 20% held reading credentials, 48% had attended some reading workshops, and some of these had taken or were taking a course in teaching reading. But a full 34% had no formal training to teach reading. Most teachers (72%) taught other subjects. Each teacher in the sample was directed to select one morning class for study. The requirement was that remedial reading was taught in that class.

The school sample included rural, suburban, and urban student populations. These students came from a variety of ethnic groups and income levels (see Table 1).

Instruments

To describe classroom processes, a classroom observation instrument was adapted and two student ratings were selected. Student outcomes were assessed by means of an achievement test given by the school district, a personality test, and student absence data. A teacher questionnaire was administered to determine whether differences in teacher characteristics and attitudes contributed to differences in student achievement or absence.

Reading Achievement Tests

District achievement scores were obtained for as many students as possible who were in the sample classrooms in the spring of 1977. All school districts used the CTBS (Comprehensive Test of Basic Skills) except for Fresno. Fresno administered the CAT. For the districts with CTBS data, a conversion program was written, converting scores from the various forms and levels (Forms R, S, T, and Levels 2, 3, 4) to Form S normalized scores.

For the CAT scores from Fresno, the conversion consisted of a two-stage process. The test publishers did not have available conversion tables for CAT to CTBS; however, they did have the correlations of CAT with the Short Form of the Test for Academic Achievement (SFTAA) and the correlations of SFTAA with Form S of the CTBS. Regression estimates of SFTAA were made using the CAT. These SFTAA estimates were then used to estimate the Form S CTBS scores.

Scores were collected for each student in the spring of 1977, and for each student, his or her score for spring 1976 was also obtained; conversions were done for both sets of scores. Classroom mean gain scores were then computed.

Secondary Observation Instrument

The Secondary Observation Instrument (SOI) was based upon previous observations systems developed at SRI International. As a

Table 1

SAMPLE DISTRICT AND SCHOOL DESCRIPTORS

District-School	1 District Size	2 Per Pupil Expenditure	3 School Size	4 % Low Income	5 % Limited English Speaking	6 Number of Categorical Aid Programs	7 % Program Participants	8 Funding Per Participant
Fresno	54,749	1,331						
School A			612	79	1	3	100	487
School B			2,079	36	0	2	28	528
School C			1,286	43	10	2	92	441
School D			804	55	8	2	68	513
School E			905	20	5	1	57	522
Monterey	13,397	1,400						
School A			950	3	5	0	0	0
School B			787	4	5	0	0	0
Ravenswood	3,406	1,152						
School A			496	43	1	3	100	268
Salinas	15,447	1,475						
School A			1,926	17	15	2	19	461
School B			1,342	15	14	2	55	401
Sequoia	10,535	1,975						
School A			2,125	6	0	0	0	0
School B			2,080	6	0	0	0	0
Tulare	4,427	1,039						
School A			534	37	0	0	0	0
School B			555	16	0	0	0	0

result of workshops conducted with secondary reading teachers, revisions were made in the instrument to permit the recording of events that occur in junior and senior high school reading classrooms.

The SOI provides a record of instructional and social activities that occur in the classroom. It records the materials being used and the interactions between teachers and students. The observer focuses on the lead teacher and records all persons with whom he/she interacts.

The SOI contains four sections. The first section, Identification Information, identifies the schools, teachers, and classes. The second section, Classroom Summary Information, records the number of adults and students attending regularly in the classroom.

The third section is the Classroom Snapshot. The Snapshot is a matrix that yields data about the activities of each adult and student in the classroom, the size of the group, and the materials being used. From this record, information is obtained on how the teacher spends his/her time and with whom, how the aides spend their time and with whom, and how often the students work independently and in what activities.

The fourth section, the Five Minute Interaction (FMI), is used to record the teacher's verbal interactions or nonverbal behaviors. It consists of a series of frames in which each behavior/interaction is recorded in the four categories provided: Whom, To Whom, What, and How. (WHO - initiates a behavior TO WHOM, WHAT - is the behavior, and HOW - describes the behavior.) Consecutive frames can record continous interactions.

Each observation booklet has one Identification Information and Classroom Summary Information form and five sets of the Classroom Snapshot and Five Minute Interaction frames. (Approximately 300 interaction frames are recorded each class period.)

Classroom Environment Scale

The Classroom Environment Scale, From R (Moos and Tricket, 1974), was selected to examine students' perceptions of the instructional process occurring in the classroom. This particular scale was normed on a sample similar to the sample population. It yields nine subscales of four items each and can be completed in approximately 10 minutes. The subscale reports the student's perceptions of (1) involvement, (2) affiliation with others in the class, (3) receiving teacher support, (4) task orientation, (5) competition, (6) order and organization, (7) rule clarity, (8) teacher control, and (9) teacher innovation.

In order to be certain that the results were not influenced by the student's skill in reading, each item on the scale was read aloud

by the data collector and the students checked the True and False column. The teacher was not present in the room at the time of the testing and students were assured that no one but the SRI staff would see the ratings.

Absence Rate Form

Attendence data were obtained from the classroom teacher. A form was developed by SRI which listed each student by name and an identification number, student's entry and leaving date in that class, and total number of days absent -- categorized by excused absence, unexcused absence and cuts. The total number of school days was also recorded.

Teacher Characteristics

To see whether teacher characteristics were related to student outcomes or classroom processes, a teacher questionnaire was selected. Eight subscales of the questionnaire prepared by the staff in the Stanford University Program on Teaching Effectiveness were used. Minor modifications were made to make items more suitable for secondary teachers. The subscales identified teacher rapport, verbal fluency, anxiety, philosophy toward student-selected or adult-directed environments, motivational techniques, teacher concerns, teacher flexibility, and biographical information.

Data Collection

One of the primary concerns of this study was to collect data that described teacher behaviors and classroom settings accurately. The value of this study depends on reliable data. Thus, it was essential that the data be gathered in a consistent fashion in all classrooms at all sites. To do this, observers were carefully selected, training procedures were developed, and the reliability and validity of the instruments were checked.

Training Classroom Observers

Participating school districts selected data gatherers who they felt would be accepted by target teachers as observers in their classrooms. All observers were credentialed teachers; some were retired and others were regular substitutes.

Those selected as observers received a home training kit with materials to be studied seven days before the observation training session. Trainees were required to memorize the definitions and to have a thorough understanding of all codes by the first day of training.

Observation training was conducted in Menlo Park, California, with eight trainees in attendance for a seven-day session. A major purpose of the training sessions was to expose the trainees to as many different examples of classroom situations as possible and to

allow discussion of how these events would be coded on the observation system.

The training sessions consisted of coding role-played episodes, video-tapes of secondary classrooms, and three periods in real classrooms. Ample time was allocated for discussing questions or confusions arising from the coding of these events. On the last day of training, all observers were required to pass a videotape criterion test on all codes. Each code had to be coded at 80% or greater correctness.

Data Collected

The class period selected by each teacher was observed on three consecutive days. This provided 15 snapshots of time allocated to activities and groupings and 900 interaction frames.

Sufficient test data to compute classroom means were obtained from 36 classrooms. Some classrooms had less than 50% of their students with pre- and post-test scores and thus were not used in the analyses.

Absence rates were obtained from 35 classes and 718 student ratings were obtained.

Analysis

Since there was little research to guide us in our search for effective instructional processes to teach reading in secondary schools, we elected to use partial correlations to identify significant relationships, and analysis of variances to see how effective processes for different achievement groups might differ.

Correlations

Our interest was to see how effective teachers used their time. To see how time was spent, the data were organized according to time spent in management and organization, interactive instruction, seatwork and off-task behavior (see Table 2).

These data suggest that teachers who spend more time organizing during class period and are not directly involved with students, have students who make less gain in reading. A negative relationship was found between reading gain and teachers offering students a number of choices about materials and activities. Outside intrusions were also negatively related to reading gain.

In classrooms where the teacher provided more interactive or oral instruction, students made more gain in reading. In this situation, the teacher reviewed and discussed homework or seatwork. Students were praised for correct work and guided to acceptable answers if the work needed corrections.

Table 2

Partial Correlations of Reading CTBS Scores and Process Variables

	v	p
ORGANIZING		
Organizing interactions	-.34	.05
Teacher organizing (alone)	-.24	.05
Teacher not interacting	-.23	.10
Teacher offers students choices	-.33	.05
Teacher/Outside intrusion	-.25	.05
INTERACTIVE ON TASK INSTRUCTION		
Review/Discuss homework or seatwork	.40	.001
Students reading aloud	.59	.001
Praise and support	.25	.05
Teachers guide to correct solution	.52	.001
Teacher instructs/chalkboard	.23	.10
SEATWORK (NON-INTERACTIVE ON-TASK)		
Student silent reading	-.30	.05
Sustained silent reading	-.20	.10
Written assignments	-.21	.10
OFF-TASK		
Social interactions	-.52	.001
Negative interactions	-.29	.05

In classrooms where students more often read aloud, students made more gain in reading. This was a surprising finding. We investigated further to see how the oral reading was being handled. The strategies used are explained in the following sections.

Teachers who allocated more time to seatwork had students who gained less in reading. The average for written work was 21% of the time whereas the average for silent reading was 12% of the time. The range for written work and silent reading was 4% to 65% and 3% to 55%, respectively. Thus, some students could have been spending nearly all of their time in seatwork activities.

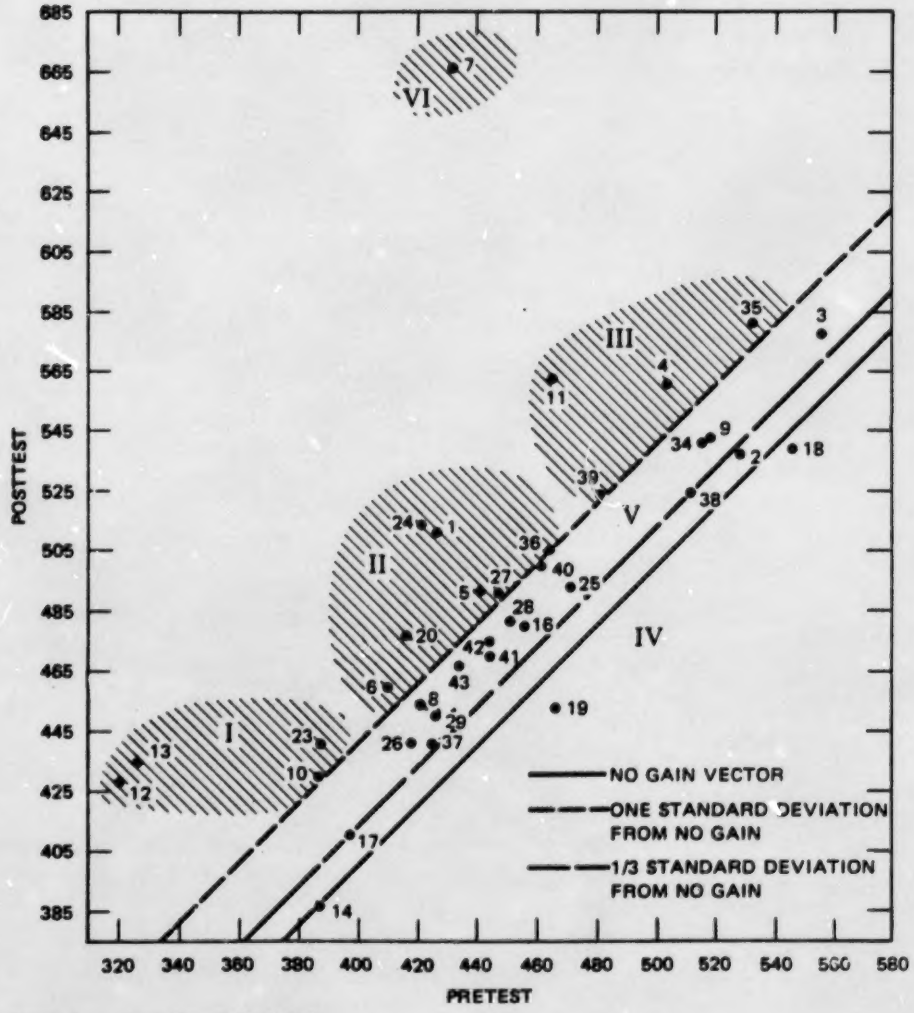
Off task behavior had a definite negative effect on student reading gain. This is similar to the findings of the Fisher and Berliner Beginning Teacher Evaluation Study (1978) and of Brophy and Evertson (1974).

Analysis of Variance

Secondary students who need remediation may be achieving anywhere from the first to sixth grade level. Our hunch was that effective instructional processes would differ for different achievement levels. To examine this question, we plotted the pre-test and post-test standard scores of the 36 classrooms on a scattergram. (These scores were also transformed to grade equivalencies.)

The determination of achievement groups required several steps. First, a "no-gain" line was defined (post-test to pre-test equals Ø). Second, consistent with other studies of this type (McDonald, 1976), the gain line was set at one-third of the standard deviation of the mean class gain score above the no-gain line (see Figure 1). The no-gain group became those classrooms with post-test/pre-test differences falling below the one-third standard deviation gain line. Twenty classes of 36 were classified as no-gain classrooms. The remaining 16 "gain" classrooms were assigned to three groups on the basis of their pre-test scores. Group I initially had students achieving from the first to fifth grade level. In classrooms 10, 12, 13 and 23, the students, on the average, made as much as two years gain in one year. Seven Group II classrooms had students achieving at the fourth to sixth grade level who made one to two years gain for the year. Group III had students reading at sixth grade or above and also made impressive gains during the year.

The interesting question is, What might those teachers be doing that is similar within groups but different across groups? To confirm the legitimacy of the four a priori groups, a stepwise descriminant function procedure was conducted using an F-to-enter criterion of .10. Based upon prior research findings and the utility of the variables in describing classroom processes, 19 variables were selected for the analysis. The results showed that



Group I - Low Pretest/High Gain
Group II - Moderate Pretest/Moderate Gain
Group III - High Pretest/Moderate Gain
Group IV - No Gain
Group V - Slight Gain
Group VI - Case Study Classroom

FIGURE 1 SCATTERGRAM OF PRETEST AND POSTTEST — CTBS SCORES

eleven process variables and two discrimant functions correctly classified all the classrooms into the appropriate a priori groups. Therefore, the four groups should have differed in classroom processes. This analysis provided a measure of confidence in proceeding with analysis of within-group composition and inter-group differences.

Demographic characteristics of the four achievement groups are presented in Table 3. Between-groups comparisons showed that gain score differences could not be explained by class size or days absent.

The principal differences between groups were found in how the teachers spend the time available for instruction (see Table 4). Teachers in Group I allocated more time to interactive activities. These teachers provided instruction 16% of the time, reviewed seatwork or homework 12% of the time, drilled and practiced 4% of the time and had students reading aloud 21% of the time.

The importance of oral reading has been stressed recently by several researchers (Hoffman, 1981; Chall, 1980). Hoffman argues that oral reading with provision of differential feedback is a valuable learning strategy. Chall and Hoffman encouraged teachers to employ this teaching technique. Certainly the research presented here underlines the importance of oral reading for secondary level reading classes.

The findings of the Phase I study indicated that oral reading was an effective strategy for remedial reading students. Because of this result, the project leader made visits to the four high-gain (Group I) teachers' classrooms. In three classrooms, the oral reading was conducted in small groups while other students did their written work or silent reading. The teachers routinely developed the vocabulary and concepts before asking the students to read aloud. The oral reading activity's purpose was to develop comprehension, not just to say words. After students read a few lines, the teacher would quickly check for understanding. Specific praise was used for correct answers. These students had opportunities to listen and speak as well as read silently and do written assignments. This combination of activities seemed to enable students to integrate their learning.

Teachers in Group II provided instruction, review, and drill and practice about 20% of the time. They had children operating from approximately the fourth to sixth grade levels. The students participated in oral reading activities (9%) as well as written and silent reading activities. These teachers were second highest in providing praise and support and guiding corrective feedback.

Teachers of the more able students in Group III provided a healthy amount of instruction, some review and practice, but very little oral reading. These students spent more time doing written assignments and silent reading than did the other two gain groups.

Table 3

DEMOGRAPHIC CHARACTERISTICS OF THE ACHIEVEMENT GROUPS - PHASES I AND II

Group	Number of Classes	Number of Students		Days Absent		Pretest Scores (CTBS)		Posttest Scores (CTBS)		Gain	
		$\bar{X}$	$\bar{SD}$	X	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Phase I											
I Low Pretest/ High Gain	4	26.50	2.08	13.77	4.39	354.43	35.65	433.12	5.80	78.69	33.74
II Moderate Pretest/ Moderate Gain	7	23.00	7.37	15.86	4.71	423.25	19.30	492.77	20.00	60.52	21.20
III High Pretest/ Moderate Gain	4	25.50	4.04	8.80	5.67	495.71	29.50	557.91	24.93	62.20	25.46
IV No Gain	7	22.29	4.07	10.19	6.44	465.26	64.83	470.63	63.16	5.37	11.14

Table 4

DISTRIBUTION OF TIME ACROSS ACTIVITIES IN FOUR ABILITY GROUPS IN SECONDARY READING CLASSROOMS*

	Group I ($\bar{X}$ Percent)	Group II ($\bar{X}$ Percent)	Group III ($\bar{X}$ Percent)	Group IV ($\bar{X}$ Percent)
Interactive On-Task Activities				
Reading aloud	21%	9%	1%	1%
Instruction	16	11	17	10
Discussion/Review	12	5	3	1
Drill and practice	4	4	4	2
Praise/support**	19	16	7	11
Corrective feedback**	20	16	4	12
Non-Interactive On-Task Activities				
Classroom management	12	15	17	27
Reading silently	9	16	12	21
Written assignments	4	22	23	28
Off-Task Activities				
Social interactions	5	6	3	8
Students uninvolved	6	4	4	9

Notes: Group I--Low prestest/high gain
Group II--Moderate pretest/moderate gain
Group III--High pretest/moderate gain
Group IV--No gain.
$\bar{X}$ = Group mean.

*These activities may occur simultaneously; therefore, the sum is greater than 100%

**This variable is reported as frequency of occurrence per 300 interactions.

Group IV teachers spent more time than all the others in classroom management activities and the least time in active instruction. Their students spent more time doing seatwork and were off task more often than students in other groups.

Summary and Conclusions

Findings from the correlations and the analysis of variance indicate that effective teachers provide the following:

1) Several activities: interactive teaching; some oral reading; and some independent seatwork (silent reading or written work).

2) Time allocated to specific activities (differed) according to achievement level.

3) Interactive instruction: informing, reviewing, asking questions to check for understanding.

4) Supportive feedback: specific praise for correct answers and guiding corrections for wrong answers.

Ineffective teachers spent 20% or more of class time organizing materials, grading papers and working alone. These teachers assigned seatwork for much of the class period and provided very little interactive instruction. Their students were off task more often than other students.

Subsequent Analysis

In Phase II of the study, teachers were trained to use some of the effective strategies. Analyses similar to those of Phase I conducted on that set of data (29 classrooms from six districts). Findings from the correlations and analysis of variance were remarkably similar for both sets of data. Summarizing the two data sets, we established the criteria shown for Sarah Adams in Figure 2. Thses criteria then form the basis for our recommendations for teacher change in behavior. The series of workshops help teachers change their behaviors as recommended.

PROFILE OF SARAH SMITH

ACTIVITIES PER % OF TIME	R*	CRITERION	CRITERION PERCENT	TEACHER BASELINE PERCENT	TEACHER POST-OBSERVATION PERCENT
PREPARATION					
MAKING ASSIGNMENTS	LESS		7	8	
ORGANIZING	LESS		5	7	
TEACHER WORKING ALONE	LESS		3	15	
INTERACTIVE INSTRUCTION					
REVIEW/DISCUSSING	MORE		10	6	
INFORMING	MORE		20	14	
DRILL AND PRACTICE	OK		2	2	
ORAL READING	MORE		9	2	
NON-INTERACTIVE**					
DOING WRITTEN WORK	OK		25	20	
SILENT READING	LESS		9	20	
OFF-TASK					
STUDENTS SOCIALIZING	LESS		4	8	
STUDENTS UNINVOLVED	LESS		5	15	
TEACHER DISCIPLINING	LESS		1	6	

* R = RECOMMENDATIONS

**STUDENTS WORK ALONE.

Figure 2

PROFILE OF SARAH SMITH

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